

Amendments to the Claims

1 Claim 1 (original): A plurality of arrays representing a structured document in an array-based
2 storage format, wherein the arrays reside on one or more computer-readable media and comprise:
3 an element name array, the element name array comprising an element name entry for each
4 element in the structured document;

5 an element value array, the element value array comprising an element value entry for each
6 element in the structured document;

7 an attribute array, the attribute array comprising an attribute entry for each element in the
8 structured document;

9 a parent array, the parent array comprising a parent entry for each element in the
10 structured document and wherein a value of each parent entry identifies a parent of the element;
11 and

12 a child array, the child array comprising a child entry for each element in the structured
13 document and wherein a value of each child entry identifies zero or more children of the element.

1 Claim 2 (original): The arrays according to Claim 1, wherein each element name entry specifies a
2 starting name position and a name length.

1 Claim 3 (original): The arrays according to Claim 2, wherein the starting name position is relative
2 to a beginning of a storage buffer wherein a name of each of the elements is stored.

1 Claim 4 (original): The arrays according to Claim 1, wherein each element name entry specifies a

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2 starting name position and an ending name position, and wherein the starting and ending name
3 positions are relative to a beginning of a storage buffer wherein a name of each of the elements is
4 stored.

1 Claim 5 (original): The arrays according to Claim 1, wherein each element value entry specifies a
2 starting value position and a value length.

1 Claim 6 (original): The arrays according to Claim 5, wherein the starting value position is relative
2 to a beginning of a storage buffer wherein a value of each of the elements is stored.

1 Claim 7 (currently amended): The arrays according to Claim [[5]] 1, wherein each element value
2 entry specifies a starting value position and an ending value position, and wherein the starting and
3 ending value positions are relative to a beginning of a storage buffer wherein a value of each of
4 the elements is stored.

1 Claim 8 (original): The arrays according to Claim 1, wherein each attribute entry specifies a
2 reference to a secondary array, wherein the secondary array comprises a secondary attribute entry
3 for each of one or more attributes of those ones of the elements which have attributes, and a null
4 value otherwise.

1 Claim 9 (original): The arrays according to Claim 8, wherein each secondary attribute entry
2 specifies a starting name position and a length for a name of the attribute, and a starting value

3 position and a length for a value of the attribute.

1 Claim 10 (original): The arrays according to Claim 8, wherein each secondary attribute entry
2 specifies a starting name position and an ending name position for a name of the attribute, and a
3 starting value position and an ending value position for a value of the attribute.

1 Claim 11 (original): A plurality of arrays representing a structured document in an array-based
2 storage format, wherein the arrays reside on one or more computer-readable media and comprise:
3 an element name array, the element name array comprising an element name entry for each
4 element in the structured document, wherein each element name entry specifies a starting name
5 position and one of (1) a name length or (2) an ending name position;
6 an element value array, the element value array comprising an element value entry for each
7 element in the structured document, wherein each element value entry specifies a starting value
8 position and one of (1) a value length or (2) an ending value position;
9 a parent array, the parent array comprising a parent entry for each element in the
10 structured document and wherein a value of each parent entry identifies a parent of the element;
11 and
12 a child array, the child array comprising a child entry for each element in the structured
13 document and wherein a value of each child entry identifies zero or more children of the element.

1 Claim 12 (original): A computer program product embodied on one or more computer-readable
2 media, the computer program product adapted for representing a source document encoded in an

3 extensible structured notation using a plurality of arrays and comprising:

4 computer-readable program code means for generating an element name array, the
5 element name array comprising an element name entry for each element in the source document,
6 wherein each element name entry specifies a starting name position and one of (1) a name length
7 or (2) an ending name position;

8 computer-readable program code means for generating an element value array, the
9 element value array comprising an element value entry for each element in the source document,
10 wherein each element value entry specifies a starting value position and one of (1) a value length
11 or (2) an ending value position;

12 computer-readable program code means for generating a parent array, the parent array
13 comprising a parent entry for each element in the source document and wherein a value of each
14 parent entry identifies a parent of the element;

15 computer-readable program code means for generating a child array, the child array
16 comprising a child entry for each element in the source document and wherein a value of each
17 child entry identifies zero or more children of the element; and

18 computer-readable program code means for storing the generated arrays in memory or
19 writing the generated arrays to one or more storage media.

1 Claim 13 (original): The computer program product according to Claim 12, further comprising:

2 computer-readable program code means for generating an attribute array, the attribute
3 array comprising an attribute entry for each element in the structured document, wherein each
4 attribute entry specifies a reference to a secondary array and wherein the secondary array

5 comprises a secondary attribute entry for each of one or more attributes of those ones of the
6 elements which have attributes, and a null value otherwise; and wherein each secondary attribute
7 entry specifies a starting name position and one or (1) an ending name position or (2) a length for
8 a name of the attribute, and a starting value position and one or (1) an ending value position or
9 (2) a length for a value of the attribute.

1 Claim 14 (original): The computer program product according to Claim 12, wherein the
2 extensible structured notation is XML (Extensible Markup Language).

1 Claim 15 (original): The computer program product according to Claim 12, further comprising
2 computer-readable program code means for generating an output structured document from the
3 arrays.

1 Claim 16 (original): A computer program product embodied on one or more computer-readable
2 media, the computer program product adapted for creating a plurality of arrays to represent a
3 source document encoded in a machine-oriented extensible structured notation ("mXML") and
4 comprising:

5 computer-readable program code means for obtaining a node count from the source
6 document;

7 computer-readable program code means for generating the arrays based on the node
8 count; and

9 computer-readable program code means for processing a plurality of node specifications

10 from the source document, further comprising:

11 computer-readable program code means for obtaining an element name
12 specification from the node specification;

13 computer-readable program code means for storing element name information in
14 an element name array, using the element name specification;

15 computer-readable program code means for obtaining an attribute list specification
16 from the node specification;

17 computer-readable program code means for storing attribute information in an
18 attribute array, using the attribute list specification;

19 computer-readable program code means for obtaining a child list specification from
20 the node specification;

21 computer-readable program code means for storing child information in a child
22 array, using the child list specification;

23 computer-readable program code means for storing parent information in a parent
24 array, using the child list specification;

25 computer-readable program code means for obtaining an element value
26 specification from the node specification; and

27 computer-readable program code means for storing element value information in
28 an element value array, using the element specification.

1 Claim 17 (original): The computer program product according to Claim 16, further comprising
2 computer-readable program code means for generating an output mXML document by traversing

3 the plurality of arrays.

1 Claim 18 (currently amended): A computer program product embodied on one or more
2 computer-readable media, the computer program product adapted for efficiently transforming a
3 structured document and comprising:

4 computer-readable program code means for creating an array-based representation of the
5 structured document, further comprising:

6 computer-readable program code means for creating an element name array to
7 store information pertaining to a name of each of a plurality of elements in the structured
8 document;

9 computer-readable program code means for creating an element value array to
10 store information pertaining to a value of each of the elements;

11 computer-readable program code means for creating an attribute array to store
12 information pertaining to a name and a value of each of zero or more attributes of each of the
13 elements;

14 computer-readable program code means for creating a parent array to store
15 information pertaining to a parent of each of the elements; and

16 computer-readable program code means for creating a child array to store
17 information pertaining to zero or more children of each of the elements;

18 computer-readable program code means for obtaining an identification of a particular
19 element of the structured document which is to be transformed;

20 computer-readable program code means for locating an entry for the particular element in

21 the arrays-based representation; and
22 computer-readable program code means for transforming information represented by the
23 located entry.

1 Claim 19 (original): The computer program product according to Claim 18, wherein the
2 identification is an element name and wherein the computer-readable program code means for
3 locating further comprises computer-readable program code means for searching the element
4 name array to find a match with the identification.

1 Claim 20 (original): The computer program product according to Claim 18, wherein the
2 identification is an ordinal representing a relative position of the particular element in the
3 structured document, and wherein the computer-readable program code means for locating
4 further comprises computer-readable program code means for using the ordinal as an index to
5 access one or more of the arrays in the array-based representation.

1 Claim 21 (original): A system for representing a source document encoded in an extensible
2 structured notation using a plurality of arrays, comprising:
3 means for generating an element name array, the element name array comprising an
4 element name entry for each element in the source document, wherein each element name entry
5 specifies a starting name position and one of (1) a name length or (2) an ending name position;
6 means for generating an element value array, the element value array comprising an
7 element value entry for each element in the source document, wherein each element value entry

8 specifies a starting value position and one of (1) a value length or (2) an ending value position;

9 means for generating a parent array, the parent array comprising a parent entry for each
10 element in the source document and wherein a value of each parent entry identifies a parent of the
11 element;

12 means for generating a child array, the child array comprising a child entry for each
13 element in the source document and wherein a value of each child entry identifies zero or more
14 children of the element; and

15 means for storing the generated arrays in memory or writing the generated arrays to one
16 or more storage media.

1 Claim 22 (original): The system according to Claim 21, further comprising:

2 means for generating an attribute array, the attribute array comprising an attribute entry
3 for each element in the structured document, wherein each attribute entry specifies a reference to
4 a secondary array and wherein the secondary array comprises a secondary attribute entry for each
5 of one or more attributes of those ones of the elements which have attributes, and a null value
6 otherwise; and wherein each secondary attribute entry specifies a starting name position and one
7 or (1) an ending name position or (2) a length for a name of the attribute, and a starting value
8 position and one or (1) an ending value position or (2) a length for a value of the attribute.

1 Claim 23 (original): The system according to Claim 21, wherein the extensible structured
2 notation is XML (Extensible Markup Language).

1 Claim 24 (original): The system according to Claim 21, further comprising means for generating
2 an output structured document from the arrays.

1 Claim 25 (original): A system for creating a plurality of arrays to represent a source document
2 encoded in a machine-oriented extensible structured notation ("mXML"), comprising:

3 means for obtaining a node count from the source document;

4 means for generating the arrays based on the node count; and

5 means for processing a plurality of node specifications from the source document, further
6 comprising:

7 means for obtaining an element name specification from the node specification;

8 means for storing element name information in an element name array, using the
9 element name specification;

10 means for obtaining an attribute list specification from the node specification;

11 means for storing attribute information in an attribute array, using the attribute list
12 specification;

13 means for obtaining a child list specification from the node specification;

14 means for storing child information in a child array, using the child list
15 specification;

16 means for storing parent information in a parent array, using the child list
17 specification;

18 means for obtaining an element value specification from the node specification; and

19 means for storing element value information in an element value array, using the

20 element specification.

1 Claim 26 (original): The system according to Claim 25, further comprising means for generating
2 an output mXML document by traversing the plurality of arrays.

1 Claim 27 (currently amended): A system for efficiently transforming a structured document,
2 comprising:

3 means for creating an array-based representation of the structured document, further
4 comprising:

5 means for creating an element name array to store information pertaining to a
6 name of each of a plurality of elements in the structured document;

7 means for creating an element value array to store information pertaining to a
8 value of each of the elements;

9 means for creating an attribute array to store information pertaining to a name and
10 a value of each of zero or more attributes of each of the elements;

11 means for creating a parent array to store information pertaining to a parent of
12 each of the elements; and

13 means for creating a child array to store information pertaining to zero or more
14 children of each of the elements;

15 means for obtaining an identification of a particular element of the structured document
16 which is to be transformed;

17 means for locating an entry for the particular element in the arrays-based representation;

18 and

19 means for transforming information represented by the located entry.

1 Claim 28 (original): The system according to Claim 27, wherein the identification is an element
2 name and wherein the means for locating further comprises means for searching the element name
3 array to find a match with the identification.

1 Claim 29 (original): The system according to Claim 27, wherein the identification is an ordinal
2 representing a relative position of the particular element in the structured document, and wherein
3 the means for locating further comprises means for using the ordinal as an index to access one or
4 more of the arrays in the array-based representation.

1 Claim 30 (original): A method for representing a source document encoded in an extensible
2 structured notation using a plurality of arrays, comprising the steps of:
3 generating an element name array, the element name array comprising an element name
4 entry for each element in the source document, wherein each element name entry specifies a
5 starting name position and one of (1) a name length or (2) an ending name position;
6 generating an element value array, the element value array comprising an element value
7 entry for each element in the source document, wherein each element value entry specifies a
8 starting value position and one of (1) a value length or (2) an ending value position;
9 generating a parent array, the parent array comprising a parent entry for each element in
10 the source document and wherein a value of each parent entry identifies a parent of the element;

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11 generating a child array, the child array comprising a child entry for each element in the
12 source document and wherein a value of each child entry identifies zero or more children of the
13 element; and
14 storing the generated arrays in memory or writing the generated arrays to one or more
15 storage media.

1 Claim 31 (currently amended): The method according to Claim [[21]] 30, further comprising the
2 steps of:

3 generating an attribute array, the attribute array comprising an attribute entry for each
4 element in the structured document, wherein each attribute entry specifies a reference to a
5 secondary array and wherein the secondary array comprises a secondary attribute entry for each
6 of one or more attributes of those ones of the elements which have attributes, and a null value
7 otherwise; and wherein each secondary attribute entry specifies a starting name position and one
8 or (1) an ending name position or (2) a length for a name of the attribute, and a starting value
9 position and one or (1) an ending value position or (2) a length for a value of the attribute.

1 Claim 32 (original): The method according to Claim 30, wherein the extensible structured
2 notation is XML (Extensible Markup Language).

1 Claim 33 (original): The method according to Claim 30, further comprising the step of generating
2 an output structured document from the arrays.

1 Claim 34 (original): A method for creating a plurality of arrays to represent a source document
2 encoded in a machine-oriented extensible structured notation ("mXML"), comprising the steps of:
3 obtaining a node count from the source document;
4 generating the arrays based on the node count; and
5 processing a plurality of node specifications from the source document, further comprising
6 the steps of:
7 obtaining an element name specification from the node specification;
8 storing element name information in an element name array, using the element
9 name specification;
10 obtaining an attribute list specification from the node specification;
11 storing attribute information in an attribute array, using the attribute list
12 specification;
13 obtaining a child list specification from the node specification;
14 storing child information in a child array, using the child list specification;
15 storing parent information in a parent array, using the child list specification;
16 obtaining an element value specification from the node specification; and
17 storing element value information in an element value array, using the element
18 specification.

1 Claim 35 (original): The method according to Claim 34, further comprising the step of generating
2 an output mXML document by traversing the plurality of arrays.

1 Claim 36 (currently amended): A method for efficiently transforming a structured document,
2 comprising the steps of:

3 creating an array-based representation of the structured document, further comprising the
4 steps of:

5 creating an element name array to store information pertaining to a name of each
6 of a plurality of elements in the structured document;

7 creating an element value array to store information pertaining to a value of each
8 of the elements;

9 creating an attribute array to store information pertaining to a name and a value of
10 each of zero or more attributes of each of the elements;

11 creating a parent array to store information pertaining to a parent of each of the
12 elements; and

13 creating a child array to store information pertaining to zero or more children of
14 each of the elements;

15 obtaining an identification of a particular element of the structured document which is to
16 be transformed;

17 locating an entry for the particular element in the arrays-based representation; and

18 transforming information represented by the located entry.

1 Claim 37 (original): The method according to Claim 36, wherein the identification is an element
2 name and wherein the locating step further comprises the step of searching the element name
3 array to find a match with the identification.

1 **Claim 38 (original): The method according to Claim 36, wherein the identification is an ordinal**
2 **representing a relative position of the particular element in the structured document, and wherein**
3 **the locating step further comprises the step of using the ordinal as an index to access one or more**
4 **of the arrays in the array-based representation.**